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UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY

FOREST INSECT INVESTIGATIONS

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FOREST INSECT SURVEYS

SHASTA NATIONAL FOREST - SEASON OF 1934

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FOREST INSECT SURVEYS

SHASTA NATIONAL FOREST - SEASON OF 1934

Introduction

Forest insect surveys of the eastern Shasta National Forest were carried on during the 1934 season by means of EMPNIRA funds in a program in which the United States Forest Service and the Bureau of Entomology and Plant Quarantine cooperated. During late October, six survey plots representative of five entomological units were cruised for insect losses (see attached map). The five entomological units total approximately 138,700 timbered acres of which 1920 acres or 1.4% were cruised as a sample of infestation.

The surveys were carried out with a total cost of $145.57 divided as follows:

Cost allotment	Cost	Man days
Field Work	$100.98	18
Office Work	34.07	5
Miscellaneous and transportation	12.52	
TOTAL	$147.57	23

History of the area

Surveys of parts of the southeastern Shasta Forest were initiated in 1932 with preliminary work in the Soldier Mountain and Cayton Units. In 1933, as one of the Civilian Conservation Camp projects, a more complete coverage was secured that was somewhat more intensive than that of the 1934 season. Control work that has been carried on in the areas covered by the surveys include the Soldier Mountain and Cayton projects of 1932, and the Soldier Mountain and Lava Beds projects of 1933, all of which were Forest Service projects that have been reported on by Van DeWalker and Ellis. The McCloud River Lumber Company has conducted control in the Cayton and Dana Units for the period covered by the survey reports, sometimes utilizing the customary winter control methods and sometimes utilizing summer salvage methods.

General infestation conditions

The cruise results, given in Table I, show a tendency towards increase in infestation, exclusive of the areas controlled in 1933. The general seasonal increase is not as marked as that of the more typical east side type areas of the Modoc and Lassen National Forests. This appears to be due to the transition character of the areas and infestations, as both west side type influences, which this season resulted in decreased infestations and the east side type influences, which resulted in marked increase

in infestations, affect the area.

The average volume of infested trees in the area has risen from 690 b.m. in 1932 to 870 b.m. in 1933 and to 1060 b.m. in 1934. This increase in volume could, under conditions representative of a single set of influences, be taken to indicate endemic infestation conditions. However, the average figures of this season undoubtedly have been influenced by the increased infestation of large trees in the Dana Unit and the Dickson Flat plot (#2). Variation over the entire area is so great that the average volume figure cannot be considered the trend in all units.

In general, it can be said the western pine beetle is more active this season than in 1933 and that flathead borers apparently have decreased in importance, as has the mixed brood type of infestation. Infestation in sugar pine, where that species occurs in the stand, has shown an appreciable increase.

Infestation conditions and control possibilities

Estimates of loss per section and per unit are given in table II. Plate I shows the infestation trends since 1932. The following analysis of conditions in each unit give our estimates of infestation conditions and our control recommendations.

Lava Unit.- This unit, typical of east side infestation conditions carries an open growing stand of short trees that suffer a comparatively heavy loss. The estimated 1934 loss is considered to be about normal for the site and environmental conditions of the area. Heavier losses are being suffered in the eastern edge of the unit.

In 1933 a 4½ section MSW control project near Timbered Crater resulted in the treating of 170 trees. Apparently successful results were secured as the survey plot (#9), which lies in the treated area, showed a decrease in infestation of about 33%. This is believed to be a local reduction typical of infestation in the control project area. Untreated lands, which carry very light stands, have suffered increased losses. However, control is not recommended in this area this season due to the normal nature of the infestation, the light stand of timber and the indefinite date of utilization.

Dana Unit.- This unit, chiefly outside the forest boundary and largely administered by the McCloud River Lumber Company carries a valuable stand of pure ponderosa pine and mixed conifer type. Plot 1 samples the first named timber type and plot 2 the second. In general, volume losses have increased markedly in this unit, although the large average size results in relatively low losses in terms of number of infested trees.

The McCloud River Lumber Company has carried on control in this area during the past two years and salvaged insect killed trees during the summer of 1934. The present indication is that infestation tendencies are upward and that either control or salvage is advisable on the private holdings.

both to protect the timber remaining until it is utilized and to maintain the control of the past two years which probably has aided materially in reducing losses.

Soldier Mountain Unit.- This unit, largely owned by the U.S. Government is a fringe type of timber, having extreme and critical environmental conditions. The 1932-33 control project, which was experimental and was to have immediately preceded utilization and the 1933-34 project conducted as an ECW activity, has resulted in some reduction which, on plot #3amounted to 52%. The area outside the project boundaries has not experienced a similar reduction.

Although previous control projects apparently have resulted in a reduction of losses, the poor quality of the timber and the critical level of the environmental factors makes further control activity inadvisable unless salvage is a guaranteed sequel.

Gayton Unit.- This Unit, the timber of which is largely under the administration of the McCloud River Lumber Company, has been treated, in part at least, by that company during 1932 and 1933. It is understood further treatment is contemplated for this season. The greater portion of this unit, chiefly that portion in upper Clark Creek Basin, apparently has infestation trends closely following those of the west side type. However, at the lower altitudes and on the southern aspects the encroachment of east side infestation trends has been evident. Although losses on the sample plot in this unit have decreased considerably during the past two seasons, it is felt the better quality timber of the mixed pine type is subject to the hazard of heavy infestation under present environmental conditions.

Pit River Unit.- Although no sample was made of this unit during 1934, it is believed the losses in the poor quality timber at the lower altitudes has increased this season, whereas the better quality timber at the higher altitudes is in much better condition. The remote possibilities of utilization of the poorer quality timbered areas makes control of very low priority.

Burney Unit.- The trend of infestation in this timber is definitely upward this season and infestations are following the east side type tendencies to a large extent. Control has been considered for this unit for several years but the mixed ownership of the area, which does not allow government treatment of any large single block of timber, has prevented action. The accessibility of the timber, the values represented by the State Park at Burney Falls and the fact that any return of normal environmental conditions will first show its effects in this area would make control advisable in this area, if a project could be arranged. ECW

Observations on other areas.-

Examination of cutover areas in the northern end of the forest north and east of Weed show heavy losses in the reserve stands on government lands. In addition epidemic conditions, similar to those on the Modoc National Forest are invading the privately owned timber south of the Lava Beds National Monument. The formation of groups of considerable size and

the loss of much valuable timber appears to indicate a marked progression of critical conditions into the stands of better quality at the higher altitudes that heretofore have been relatively immune.

Summary of recommendations

In areas of government owned timber of sufficient size to constitute satisfactory control projects, it is considered that control, with allotment of funds for the project expenses, is inadvisable. In the Lava Beds Unit, the fact that the infestation appears to be at or near the normal for the environmental conditions, makes allotment of funds unnecessary. In the Soldier Mountain Unit, the poor quality of the timber and the fact that utilization appears to be but a slight possibility, makes recommendation of continued work inadvisable.

In the Burney Unit the mixed ownership of the area and the remote possibilities of securing sufficient cooperation to assure the formation of a sufficiently isolated control project appears to prevent the work, although the amount and character of the infestation is considered justification of an ECW control recommendation.

Government ownership in the Dana Unit is negligible, although infestation in the private lands has prompted a recommendation of control. Similarly the government ownership in and near Cayton in timber of sufficient health and vigor to warrant control is not in amounts to give a project of high priority.

TABLE I

PLOT LOSSES -SHASTA NATIONAL FOREST
1934 Season- Per Section Basis

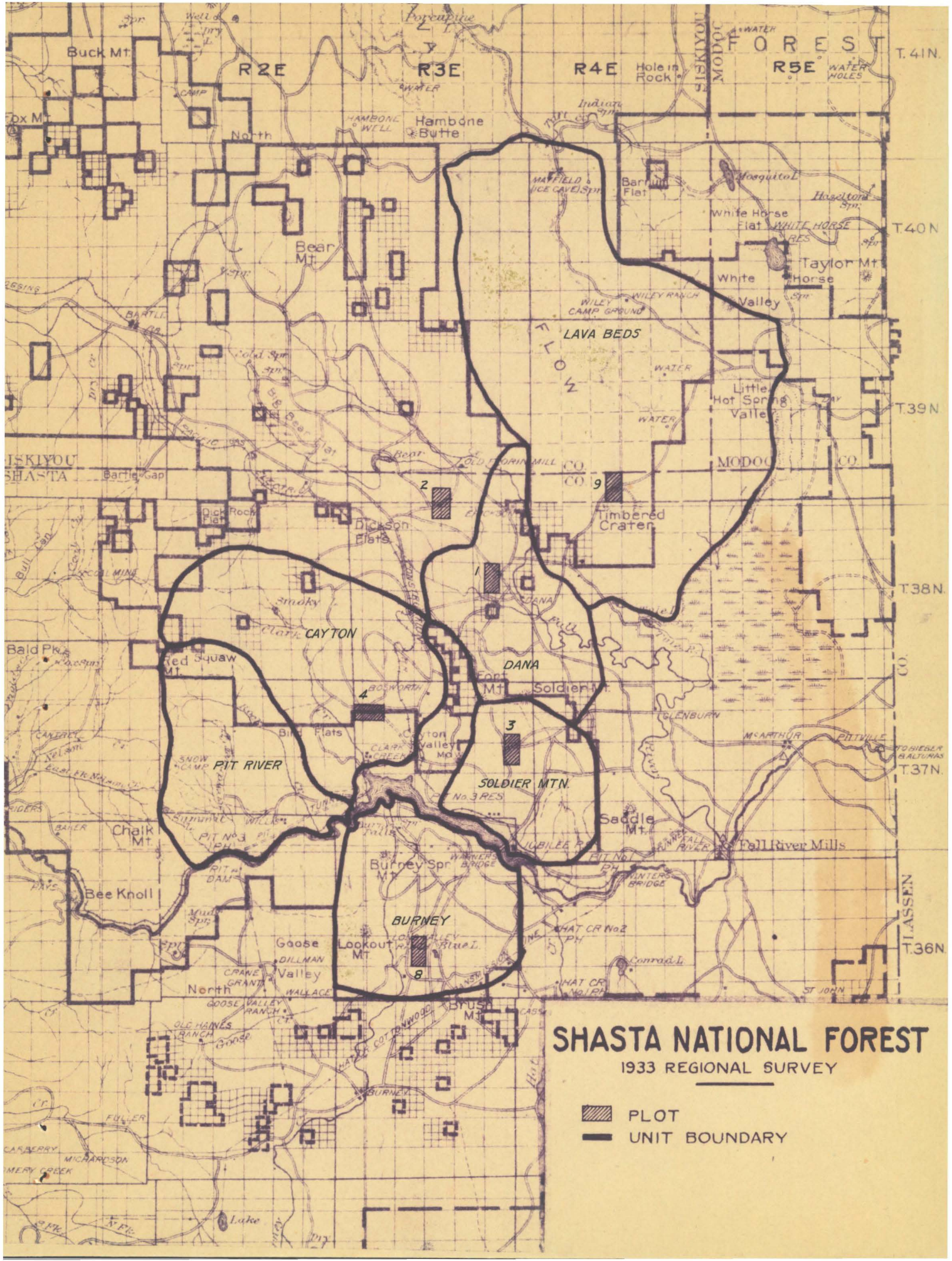
Plot No	1932 Trees	1932 Volume BM.	1932 BM per Acre	1933 Trees	1933 Volume BM.	1933 BM per Acre	Rel.1932 loss %	1934 Date	1934 Cruised Loss Trees	1934 Cruised Loss Volume BM.	Corr. Factor	1934 Estimated Loss Trees	1934 Estimated Loss Volume BM.	1934 BM per Acre	Rel1933 loss %
1	56	72,520	113	[a] 28	32,760	51	-55	10/23:	26	69,060	80	45:	86,350	135	+165
2	50	157,780	215	[a] 28	89,750	140	-45	10/23:	28	108,420	80	45:	135,500	212	+ 51
3	554	193,900	305	[b]168	101,500	159	-48	10/24:	84	51,680	65	122:	48,750	76	- 52
4	140	145,280	227	[a] 62	71,580	112	-51	10/24:	54	47,380	80	50:	59,200	93	- 17
8	98	95,280	149	62	40,680	64	-57	10/25:	78	48,720	65	115:	74,950	117	+ 80
9	222	114,040	178	[b]100	53,880	84	-53	10/22:	54	28,080	75	67:	36,050	56	- 35
Ave:	183	126,470	198	75	65,030	102	-48.5		50	53,880		74:	75,470	115	+ 13

[a] Treated by McCloud Lumber Co.
[b] " " United States Forest Service

TABLE II

Unit Loss Estimates

Unit	Timbered acreage	1933 Per Section Trees	1933 Per Section Volume BM.	1933 Per Unit Trees	1933 Per Unit Volume BM.	1934 Per Section Trees	1934 Per Section Volume BM.	1934 Per Unit Trees	1934 Per Unit Volume BM.	Rel.to Loss, 1933 Increase	Rel.to Loss, 1933 Decrease
Lava Beds	68,880	64	38,200	6,880	4,106,500	72	39,100	7,740	4,205,000	+2	
Dana	17,408	45	38,700	1,170	1,052,600	61	73,400	1,660	1,996,000	+90	
Soldier Mt.	7,040	138	87,450	1,480	962,000	140	77,000	1,540	847,000		- 12
Burney	18,944	63	40,680	1,860	1,204,000	115	74,950	3,400	2,219,000	+84	
Cayton	26,432	79	90,850	3,260	3,752,000	50	59,200	2,070	2,445,000		- 45


R2E
R3E
R4E
R5E
T.41N.
T.40N
T.39N
T.38N.
T.37N.
T.36N.
FOREST
Buck Mt.
Hambone Butte
Hole in Rock
Bear Mt.
Barnum Flat
Mosquito L.
White Horse Flat
Taylor Mt.
White Horse Valley
LAVA BEDS
FLOW
Little Hot Spring Valley
Timbered Crater
Dickson Flats
Dick Rock Flat
Barlow Gap
CAYTON
Bald Pk.
Red Squaw Mt.
DANA
Fort Soldier Mt.
Bill Flats
Cayton Valley Mdw.
PIT RIVER
SOLDIER MTN.
No. 3 RES
Saddle Mt.
Fall River Mills
Chalk Mt.
Bee Knoll
Burney Spr. Mt.
BURNEY
Goose Valley
Lookout Mt.
North Valley
Brush Mt.
Conrad L.
McARTHUR
PITTVILLE
GLENBURN
MODOC CO.
SHASTA CO.
SISKIYOU CO.
TLASSEN
1
2
3
4
8
9
SHASTA NATIONAL FOREST
1933 REGIONAL SURVEY
PLOT
UNIT BOUNDARY

U. S. BUREAU OF ENTOMOLOGY & PLANT QUARANTINE

INSECT LOSSES

SHASTA NATIONAL FOREST, CALIFORNIA

1932-1934

ANNUAL M. B. M. LOSSES PER SECTION BY UNITS